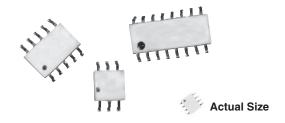
Vishay Dale Thin Film



Sandwich, 50 mil Pitch, Dual In-Line Thin Film Resistor, Surface Mount Network



A dual-in-line monolithic ceramic sandwich in a variety of pin sizes (4 to 20) that allow higher resistance integration than traditional chip and wire molded construction. In addition, tighter resistance tolerances can be obtained over traditional molded networks due to the elimination of molding temperature and stress.

FEATURES

- Lead (Pb)-free gold plated terminals standard
- Gold-to-gold terminations. External leads are attached directly to gold pads on the ceramic substrate by thermo-compression bonding (no internal solder)



RoHS

COMPLIANT

HALOGEN

FREE

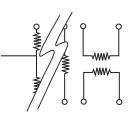
CSC

- Tighter tolerances than molded standards (0.01 %)
- · Ceramic package with no cavity
- · Flexibility of lead variations to save PC board space
- Compliant to RoHS Directive 2002/95/EC
- Halogen-free according to IEC 61249-2-21 definition Note
- Pb containing terminations are not RoHS compliant, exemptions may apply

TYPICAL PERFORMANCE

\bullet	ABSOLUTE TRACKING		
TCR	25	5	
	ABSOLUTE	RATIO	
TOL.	0.1	0.02	

SCHEMATIC



Custom schematics available Please consult factory

TEST	SPECIFICATIONS	CONDITIONS	
Material	Tantalum nitride or passivated nichrome ⁽¹⁾	-	
Pin/Lead Number	4 to 20	-	
Resistance Range	100 Ω to 1.5 MΩ total	-	
TCR: Absolute	± 25 ppm/°C to ± 50 ppm/°C	- 55 °C to + 125 °C	
TCR: Tracking	± 5 ppm/°C (typical)	- 55 °C to + 125 °C	
Tolerance: Absolute	± 0.05 % to ± 1.0 %	+ 25 °C	
Tolerance: Ratio	± 0.02 % to ± 0.1 %	+ 25 °C	
Power Rating: Resistor	100 mW	Per element at + 70 °C	
Power Rating: Package	500 mW	Maximum at + 70 °C	
Stability: Absolute	$\Delta R \pm 0.1 \%$	2000 h at + 70 °C	
Stability: Ratio	$\Delta R \pm 0.03 \%$	2000 h at + 70 °C	
Voltage Coefficient	0.1 ppm/V	-	
Working Voltage	100 V max. not to exceed $\sqrt{P \times R}$ -		
Operating Temperature Range	- 55 °C to + 125 °C	-	
Storage Temperature Range	- 55 °C to + 150 °C	-	
Noise	< - 30 dB	-	
Thermal EMF	0.08 µV/°C	-	
Shelf Life Stability: Absolute	$\Delta R \pm 0.01 \%$	1 year at + 25 °C	
Shelf Life Stability: Ratio	$\Delta R \pm 0.002 \%$	1 year at + 25 °C	

Note

⁽¹⁾ Passivated nichrome is not standard film type for CSO series, consult factory if required

CSO



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DIMENSIONS AND IMPRINTING in inches and millimeters				
		DIMENSION	INCHES	MILLIMETERS
	А	0.050	1.27	
	В (Тур.)	0.015	0.38	
└ ─── L ───►	< L►	С	0.017 - 0.005 + 0.0010	0.432
–––––––––––––––––––––––––––––––––––––	C	D (Max.)	0.157	3.99
	л 🖊 🔒	E	0.239	6.07
		F (Min.)	0.005	0.13
		G (Typ.)	0.006	0.15
		H (Max.)	0.070	1.72
		L (6 Pins)	0.150 ± 0.01	3.81
		L (8 Pins)	0.200 ± 0.01	5.08
		L (10 Pins)	0.250 ± 0.01	6.35
		L (12 Pins)	0.300 ± 0.01	7.62
		L (14 Pins)	0.350 ± 0.01	8.89
		L (16 Pins)	0.400 ± 0.01	10.16
		L (18 Pins)	0.450 ± 0.01	11.43
		L (20 Pins)	0.500 ± 0.01	12.70

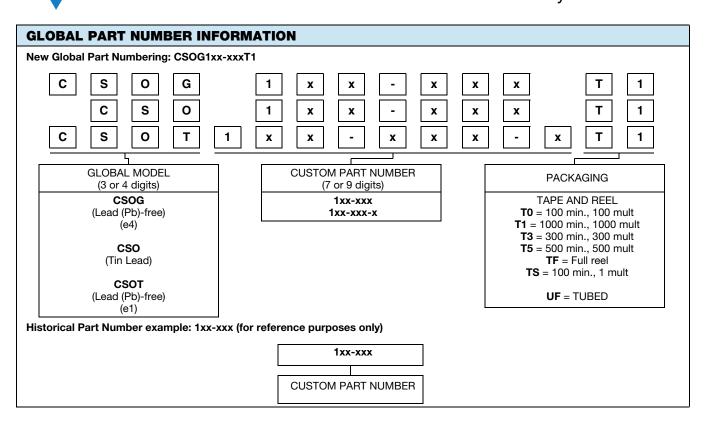
MECHANICAL SPECIFICATIONS			
Resistive Element	Passivated nichrome or tantalum nitride		
Body	Ceramic		
Lead Coplanarity	± 0.004		
Substrate Material	Alumina		
Marking Resistance to Solvents	Per MIL-PRF-83401		
Terminals	Copper alloy		
Plating	Nickel/gold		
Model CSOG - Lead (Pb)-free Standard	Gold plated		
Model CSO - Tin/Lead Solder Coated Option	Sn63		
Model CSOT - Lead (Pb)-free Solder Coated Option	96.5 % Sn, 3.0 % Ag, 0.5 % Cu		

ORDERING INFORMATION CHECK LIST				
Special requirements should be identified in advance, but as a minimum, you should have the following information ready.				
ELECTRICAL	MECHANICAL			
 Resistors, by value and tolerance Reference resistor(s) and matching of which resistors to which reference resistors Reference by ratio Absolute temperature coefficient of resistivity Temperature tracking of subordinate resistors to reference resistor(s) Maximum operating voltage Resistor power ratings Operating temperature range 	 Maximum allowable seated height (from PC board to top of network) Special marking concerns Schematic pin out of package Specify if solder coated leads are required 			

SHAY. www.vishay.com

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CSO





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